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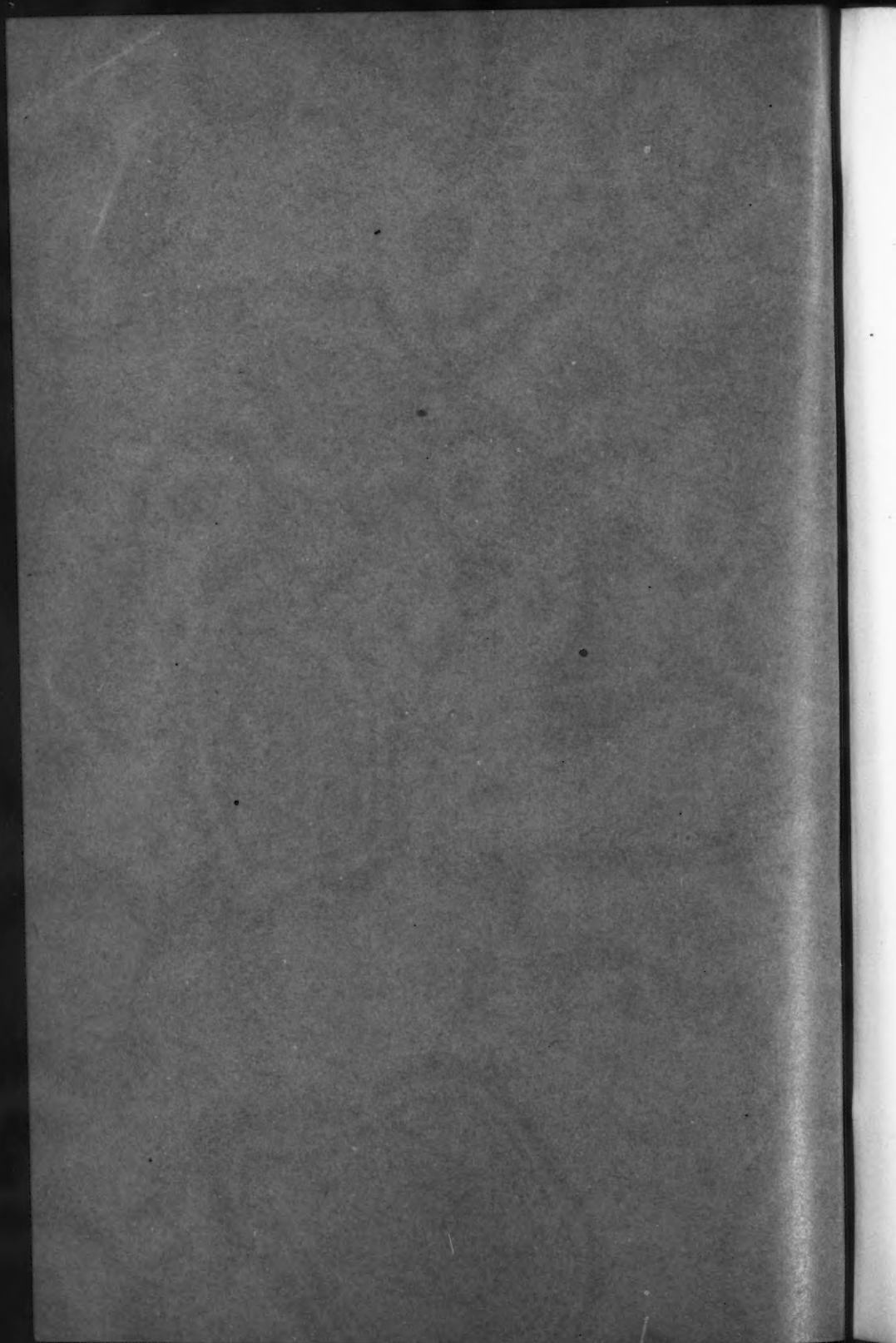
VOL. XLII—No. 8



October, 1916

Published at the House of the Society, 220 West Fifty-seventh Street, New York,
the Fourth Wednesday of each Month, except June and July.

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Entered as Second-Class Matter at the New York City Post Office, December 15th, 1896.
Subscription, \$5 per annum.



PROCEEDINGS

OFFICERS FOR 1916

AMERICAN SOCIETY

CIVIL ENGINEERS

(INSTITUTED 1852)

VOL. XLII—No. 8

OCTOBER, 1916

Edited by the Secretary, under the direction of the Committee on Publications.
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NEW YORK 1916

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Term expires January,

1919:

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ON VALUATION OF PUBLIC UTILITIES: Frederic P. Stearns, Charles S. Churchill, Leonard Metcalf, William G. Raymond, Henry E. Riggs, Jonathan P. Snow, William J. Wilgus.

TO INVESTIGATE CONDITIONS OF EMPLOYMENT OF, AND COMPENSATION OF, CIVIL ENGINEERS: Nelson P. Lewis, S. L. F. Deyo, Dugald C. Jackson, William V. Judson, George W. Tillson, C. F. Loweth, John A. Bensele.

TO CODIFY PRESENT PRACTICE ON THE BEARING VALUE OF SOILS FOR FOUNDATIONS, ETC.: Robert A. Cummings, Edwin Duryea, Jr., E. G. Haines, Allen Hazen, James C. Meem, Walter J. Douglas.

ON A NATIONAL WATER LAW: F. H. Newell, W. C. Hoad, John H. Lewis.

TO REPORT ON STRESSES IN RAILROAD TRACK: A. N. Talbot, A. S. Baldwin, J. B. Berry, G. H. Brenner, John Brunner, W. J. Burton, Charles S. Churchill, W. C. Cushing, Robert W. Hunt, George W. Kittredge, Paul M. LaBach, C. G. E. Larsson, G. J. Ray, Albert F. Reichmann, H. R. Safford, F. E. Turneure, J. E. Willoughby.

The House of the Society is open from 9 A. M. to 10 P. M. every day, except Sundays, Fourth of July, Thanksgiving Day, and Christmas Day.

HOUSE OF THE SOCIETY—220 WEST FIFTY-SEVENTH STREET, NEW YORK.

TELEPHONE NUMBER.....1446 Circle.

CABLE ADDRESS....."Ceas, New York."

AMERICAN SOCIETY OF CIVIL ENGINEERS

INSTITUTED 1852

PROCEEDINGS

This Society is not responsible for any statement made or opinion expressed in its publications.

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MINUTES OF MEETINGS

OF THE SOCIETY

September 20th, 1916.—The meeting was called to order at 8.30 P. M.; J. Waldo Smith, M. Am. Soc. C. E., in the chair; Chas. Warren Hunt, Secretary; and present, also, 202 members and 39 guests.

A paper by Israel V. Werbin, Assoc. M. Am. Soc. C. E., entitled "Tunnel Work on Sections 8, 9, 10, and 11, Broadway-Lexington Avenue Subway, New York City", was presented by the author and illustrated with lantern slides.

A communication on the subject by Maurice Griest, Esq., was read by the Secretary, and the paper was discussed by Messrs. T. Kennard Thomson, John H. Madden, Robert H. Jacobs, John H. Myers, H. G. Moulton, W. J. Boucher, Robert Ridgway, C. V. V. Powers, and the author.

The Secretary announced the election of the following candidates on September 12th, 1916:

AS MEMBERS

JAMES MURRAY BOYLE, New York City
 JOHN LAFAYETTE BROWER, Toronto, Ont., Canada
 JOHN RYAN BURKE, Boston, Mass.
 JOHN CARSON, Duluth, Minn.
 LOUIS RENO COBB, New York City
 EDWARD KIRK COE, Duluth, Minn.
 JOACHIM GOTSCHÉ GIAVER, Chicago, Ill.
 MEIER GEORGE HILPERT, Harrisburg, Pa.
 WILLIAM HORATIO McALPINE, Louisville, Ky.
 GEORGE BRAGG MASSEY, Chicago, Ill.
 ARTHUR PAGE NOYES, San Francisco, Cal.
 CHESTER NELSON REITZE, Seattle, Wash.
 WILLIAM LINCOLN ROCKWELL, San Antonio, Tex.
 ARTURO RODRIGUEZ, Ithaca, N. Y.
 ERNEST GEORGE SCHURIG, Lincoln, Nebr.
 FENWICK FENTON SKINNER, New York City
 MILTON THEODORE THOMPSON, New York City
 MIGUEL TRIANA, Bogota, Colombia
 WILLIAM GORDON WOOLFOLK, Chicago, Ill.

AS ASSOCIATE MEMBERS

JOHN WADDINGTON HARRY BARNES, Madera, Cal.
 JOHN ARTHUR BEEMER, Boise, Idaho
 CHARLES RENWICK BRECK, Jr., Anchorage, Alaska
 HOWARD EDWARD BURNS, St. Louis, Mo.
 CHARLES ALBERT CUMMINS, Baltimore, Md.
 THOMAS AUSTIN CURRIE, Jr., Boston, Mass.
 CHARLES HENRY DADING, Philadelphia, Pa.
 WILLIAM EDWARD DAWSON, Dubuque, Iowa
 WILLIAM DRISCOLL, Guantanamo, Cuba
 ALLEN DOUGLAS DUCK, Greenville, Tex.
 PHILIP NORRISON FAWCETT, Tientsin, China
 VICTOR LEROY FIXEN, St. Paul, Minn.
 ALEXANDER VINCENT GALLOGLY, New York City
 WILLIAM RICHARD GELSTON, Quincy, Ill.
 WILLIAM ALBERT GROVER, Dover, N. H.
 JOHN LECHMERE GUPPY, Port of Spain, Trinidad
 HERMAN HENRY HANINK, Palos Park, Ill.
 HARLAN TYLEE HARE, Duluth, Minn.
 CARL JAMES HERBOLD, Cleveland, Ohio
 GEORGE MARTIN HOPKINSON, New York City

JOHN SPENCE HOWARD, Baltimore, Md.
 ARTHUR DAVID HYMAN, New York City
 NATHAN CLARKE JOHNSON, New York City
 EDWARD LINDLEY JONES, Evanston, Ill.
 EARL FOSTER KELLEY, Ames, Iowa
 PERCY MAPES LAU, Detroit, Mich.
 ALEXANDER ROSS LECKIE, Dallas, Tex.
 LEON RODERICK MACKENZIE, Chicago, Ill.
 JOHN JOSEPH MCCABE, Troy, N. Y.
 WILLIAM LAMSON MCCARTY, Santo Domingo;

Dominican Republic

CARL ARTHUR MCCLAIN, Emerson, Iowa
 ERWIN MAERKER, Jackson, Mich.
 WILLIAM WHIPPLE MICHAEL, Wallkill, N. Y.
 JEWETT BEACH NEWTON, Boston, Mass.
 ALBERT COLWELL NORTON, Denver, Colo.

SOLOMON RESWICK, Utica, N. Y.

FRED DENNISTON SAYER, Brookville, Pa.

JOHN GEORGE SCHMIDT, Norwood, Ohio

JOHN ROCKWOOD SHERMAN, Meadow Creek, Wash.

BENJAMIN ALVAN SLEEPER, Camden, N. J.

CLARK DEE SNIGGS, Manila, Philippine Islands

BURT STIMSON, Seattle, Wash.

ARTHUR DUCAT STIVERS, Pittsburg, Tex.

HORACE STRINGFELLOW, Alexandria, Va.

JOSEPH C. THOMA, Salt Lake City, Utah

MARTIN WILHELM TORKELSON, Madison, Wis.

KELLS EMMETT TRAYLOR, Winona, Miss.

WINSLOW BARNES WATSON, Albany, N. Y.

WILFRED ASHENHURST WHITE, Portland, Ore.

RUDOLPH JAMES WIG, Washington, D. C.

As Associates

ALBERT FARWELL BEMIS, Boston, Mass.

HOWARD EMERSON CHURCH, Springfield, Mass.

EDWARD KIMBALL FENNO, Syracuse, N. Y.

ROY ARTIMUS MANWARING, Philadelphia, Pa.

WILLIAM LEWIS STANCLIFFE, New York City

As Juniors

HARRY SAMUEL ANDREWS, Jackson, Tenn.

CLIFFORD AULL BETTS, Mariel, Cuba

KENDAL BENJAMIN BRAGG, Dayton, Ohio

GEORGE DASHIELL CAMP, Boston, Mass.

JAMES LESLIE CHEATHAM, New York City
 DONALD GLADSTONE COOMBS, Meadow Creek, Wash.
 ALBERTO DUPUY, Bogota, Colombia
 BENJAMIN HURT HARDAWAY, JR., Whitney, N. C.
 WALTON HARRINGTON, Newark, N. J.
 GERALD BRANCH HOWARD, Nashville, Tenn.
 WILLIAM CLARK IRWIN, St. Louis, Mo.
 FRANCIS WHITTIER JOHNSON, New York City
 PHILIP WHEELER KNISKERN, Chicago, Ill.
 EDWARD ALOYSIUS SHORT, Grand Meré, Que., Canada
 RAY NEWHALL SPOONER, Brooklyn, N. Y.
 MAXIMILIAN STEINBERG, New York City
 GEORGE ALBERT TILTON, JR., Los Angeles, Cal.
 LLOYD WOOLSEY WEED, New York City
 WENDELL HOWARD WOOLWORTH, Hanover, N. H.

The Secretary announced the transfer of the following candidates on September 12th, 1916:

FROM ASSOCIATE MEMBER TO MEMBER

IRVING CLINTON BROWER, Evanston, Ill.
 RALPH HANEY BURKE, Chicago, Ill.
 CAMDEN PAGE FORTNEY, Pilcher, Ky.
 WILLIAM ISAAC NOLAN, Copperhill, Tenn.
 WILLIAM WATTERS PAGON, Baltimore, Md.
 CHARLES VICTOR SEASTONE, Madison, Wis.
 IRA OTIS THORLEY, Denver, Colo.
 HOWARD MOORE TURNER, Turners Falls, Mass.
 ACHILLE OCTAVE VAN SUETENDAEL, Albany, N. Y.

FROM JUNIOR TO ASSOCIATE MEMBER

HAROLD EATON BABBITT, Urbana, Ill.
 HERBERT SCANDLIN BATTIE, Atlanta, Ga.
 WILLIAM BLAIR BOVYER, San Francisco, Cal.
 CHARLES FREDERICK BREITZKE, Boonton, N. J.
 CARLYLE HUGO BRYSON, Lima, Ohio
 ANTONIA CASTILLO Y GRAU, Cienfuegos, Cuba
 HOWARD FOSTER CLARK, San Francisco, Cal.
 JOHN RUSSELL DERRICK, Bluefield, W. Va.
 WILLIAM BULLARD DURANT, Turners Falls, Mass.
 ARTHUR LUDWIG ENGER, Tucson, Ariz.
 EDGAR DOW GILMAN, Minneapolis, Minn.
 STUART CHAPIN GODFREY, West Point, N. Y.
 PETER DAVIDSON GUNN HAMILTON, Needham, Mass.
 CHARLES ROYCE HAUKE, Harlem, Mont.

FRANK RAY HOWE, New York City

EDWIN HALL MARKS, West Point, N. Y.

WILLIAM GROVER MORRISON, Des Moines, Iowa

ALEXANDER STUART RUSSELL, Richmond, Cal.

CARL WILLIAM SCHEDLER, JR., Pittsburg, Cal.

HYMEN AARON SELTZER, St. Louis, Mo.

PETER SOO-HOO, Canton, China

GEORGE ERNEST STREHAN, New York City

JAMES ARTHUR THOMPSON, New York City

FREDERICK WILLIAMS, New London, Conn.

ALFRED DANIEL WOLFE, JR., Poughkeepsie, N. Y.

The Secretary announced the following deaths:

RICHARD PARKHURST BLOSS, of Mechanicsville, N. Y., elected Member, January 6th, 1904; died May 22d, 1916.

CHARLES ADOLPHUS CALDWELL, of Macon, Ga., elected Member, September 5th, 1911; died August 31st, 1916.

Adjourned.

October 4th, 1916.—The meeting was called to order at 8.30 P. M.; Director Arthur S. Tuttle in the chair; Chas. Warren Hunt, Secretary; and present, also, 141 members and 23 guests.

The minutes of the meeting of September 6th, 1916, were approved as printed in *Proceedings* for September, 1916.

A paper by H. de B. Parsons, M. Am. Soc. C. E., entitled "Underpinning Trinity Vestry Building for Subway Construction", was presented by the author and illustrated with lantern slides. A communication on the subject from J. C. Meem, M. Am. Soc. C. E., was read by the Secretary, and the paper was discussed by Messrs. T. Kennard Thomson, James F. Fouhy, Charles Rufus Harte, Joseph A. A. Connelly, J. S. Branne, A. W. Buel, and the author.

The Secretary announced the following deaths:

FRANK McMILLAN STANTON, of New York City, elected Member, February 1st, 1899; died September 11th, 1916.

ROBERT HAMMOND BOYNTON, of Frankfort, Ind., elected Junior, May 6th, 1914; Associate Member, April 18th, 1916; died September 18th, 1916.

Adjourned.

ANNOUNCEMENTS

The House of the Society is open from 9 A. M. to 10 P. M., every day, except Sundays, Fourth of July, Thanksgiving Day, and Christmas Day.

FUTURE MEETINGS

November 1st, 1916.—8.30 P. M.—A regular business meeting will be held, and a paper by F. H. Peters, Assoc. M. Am. Soc. C. E., entitled "A Complete Method for the Classification of Irrigable Lands", will be presented for discussion.

This paper was printed in *Proceedings* for September, 1916.

November 15th, 1916.—8.30 P. M.—At this meeting a paper by Charles A. Ferry, M. Am. Soc. C. E., entitled "The Yale Bowl", will be presented for discussion.

This paper is printed in this number of *Proceedings*.

LIST OF NOMINEES FOR THE OFFICES TO BE FILLED AT THE ANNUAL ELECTION, JANUARY 17th, 1917

The list of nominees for the offices to be filled at the Annual Meeting, January 17th, 1917, was received from the Nominating Committee. The nominee for the office of President, having declined the nomination, the Board of Direction, at its meeting on October 10th, 1916, selected a nominee, completing the list in accordance with Art. VII, Sec. 3, of the Constitution. The list has already been mailed to all Corporate Members:

For President to serve one year:

GEORGE H. PEGRAM, New York City.

For Vice-Presidents to serve two years:

GEORGE W. KITTREDGE, New York City.

GEORGE S. WEBSTER, Philadelphia, Pa.

For Treasurer to serve one year:

GEORGE W. TILLSON, Brooklyn, N. Y.

For Directors to serve three years:

ALFRED D. FLINN, New York City.....	District No. 1
LEWIS D. RIGHTS, New York City.....	District No. 1
WILLIAM R. HILL, Albany, N. Y.....	District No. 3
ARTHUR P. DAVIS, Washington, D. C.....	District No. 5
W. L. DARLING, St. Paul, Minn.....	District No. 7
R. H. THOMSON, Seattle, Wash.....	District No. 12

SEARCHES IN THE LIBRARY

In January, 1902, the Secretary was authorized to make searches in the Library, upon request, and to charge therefor the actual cost to the Society for the extra work required. Since that time many searches have been made, and bibliographies and other information on special subjects furnished.

The resulting satisfaction, to the members who have made use of the resources of the Society in this manner, has been expressed frequently, and leaves little doubt that if it were generally known to the membership that such work would be undertaken, many would avail themselves of it.

The cost is trifling compared with the value of the time of an engineer who looks up such matters himself, and the work can be performed quite as well, and much more quickly, by persons familiar with the Library.

In asking that such work be undertaken, members should specify clearly the subject to be covered, and whether references to general books only are desired, or whether a complete bibliography, involving search through periodical literature, is desired.

It sometimes happens that references are found which are not readily accessible to the person for whom the search is made. In that case the material may be reproduced by photography, and this can be done for members at the cost of the work to the Society, which is small. This method is particularly useful when there are drawings or figures in the text, which would be very expensive to reproduce by hand.

PAPERS AND DISCUSSIONS

Members and others who take part in the oral discussions of the papers presented are urged to revise their remarks promptly. Written communications from those who cannot attend the meetings should be sent in at the earliest possible date after the issue of a paper in *Proceedings*.

All papers accepted by the Publication Committee are classified by the Committee with respect to their availability for discussion at meetings.

Papers which, from their general nature, appear to be of a character suitable for oral discussion, will be published as heretofore in *Proceedings*, and set down for presentation to a future meeting of the Society, and on these, oral discussions, as well as written communications, will be solicited.

All papers which do not come under this heading, that is to say, those which, from their mathematical or technical nature, in the opinion of the Committee, are not adapted to oral discussion, will not be scheduled for presentation to any meeting. Such papers will be published in *Proceedings* in the same manner as those which are to be presented at meetings, but written discussions only will be requested for subsequent publication in *Proceedings* and with the paper in the volumes of *Transactions*.

The Board of Direction has adopted rules for the preparation and presentation of papers, which will be found on page 429 of the August, 1913, *Proceedings*.

LOCAL ASSOCIATIONS OF MEMBERS OF THE AMERICAN SOCIETY OF CIVIL ENGINEERS

San Francisco Association, Organized 1905.

President, H. L. Haehl; Secretary, E. T. Thurston, 57 Post Street, San Francisco, Cal.

The San Francisco Association of Members of the American Society of Civil Engineers holds regular bi-monthly meetings, with banquet, and weekly informal luncheons. The former are held at 6 p. m., at the Palace Hotel, on the third Tuesday of February, April, June, August, and October, and the third Friday of December, the last being the Annual Meeting of the Association.

Informal luncheons are held at 12.15 p. m., every Wednesday, and the place of meeting may be ascertained by communicating with the Secretary.

Colorado Association, Organized 1908.

President, Thomas W. Jaycox; Secretary-Treasurer, L. R. Hinman, 1400 West Colfax Avenue, Denver, Colo.

The meetings of the Colorado Association of Members of the American Society of Civil Engineers (Denver, Colo.) are held on the second Saturday of each month, except July and August. The hour and place of meeting are not fixed, but this information will be furnished on application to the Secretary. The meetings are usually preceded by an informal dinner. Members of the American Society of Civil Engineers will be welcomed at these meetings.

Weekly luncheons are held on Wednesdays at 12.30 p. m., at Daniel's and Fisher's.

Visiting members are urged to attend the meetings and luncheons.

(Abstract of Minutes of Meeting)

June 10th, 1916.—The Eighth Annual Meeting was called to order at The Denver Athletic Club; President John E. Field in the chair; L. R. Hinman, Secretary; and present, also, 30 members and 25 guests.

The minutes of the meeting of May 13th, 1916, were read and approved.

President Field presented an address on "The Engineer in the Business World".

The Reports of the Secretary-Treasurer, the Auditing Committee, and the Nominating Committee, were presented. On motion, duly seconded, the reports were accepted and ordered placed on file, and the Committees were discharged.

Messrs. W. L. Reynolds, C. S. Lambie, and R. W. Toll were appointed Tellers to canvass the ballots for officers for 1916-17.

Mr. T. B. Stearns addressed the meeting on the work of the Local Committee in connection with the National Industrial Preparedness Board.

The Secretary read the resolutions adopted by the Baltimore Association in the matter of appropriations for the use of the Maryland Board of Directors on Industrial Preparedness.

Attorney-General Farrar, State of Colorado, addressed the meeting, commenting on statements made by President Field in his address.

The Secretary announced the purchase of a stereopticon for the use of the Association.

On the report of the Tellers, the following officers were declared elected: President, Thomas W. Jaycox; Vice-President, Robert Follansbee; Secretary-Treasurer, L. R. Hinman.

J. B. Lippincott, M. Am. Soc. C. E., presented a paper on "The Construction and Operation of the Los Angeles Aqueduct", illustrating his remarks with lantern slides. A vote of thanks was tendered Mr. Lippincott for his interesting paper.

Adjourned.

Atlanta Association, Organized 1912.

President, Paul H. Norcross; Secretary-Treasurer, Thomas P. Branch, Georgia School of Technology, Atlanta, Ga.

The Association holds its meetings at the University Club, Atlanta, Ga. Regular monthly luncheon meetings are held to which visiting members of the Society are always welcome.

Baltimore Association, Organized 1914.

President, H. D. Bush; Secretary-Treasurer, Charles J. Tilden, The Johns Hopkins University, Baltimore, Md.

Cleveland Association, Organized 1914.

President, Robert Hoffmann; Secretary-Treasurer, George H. Tinker, Hickox Building, Cleveland, Ohio.

District of Columbia Association, Organized 1916.

President, A. P. Davis; Secretary-Treasurer, John C. Hoyt, U. S. Geological Survey, Washington, D. C.

Illinois Association, Organized 1916.

President, Onward Bates; Secretary-Treasurer, E. N. Layfield, 4251 Vincennes Avenue, Chicago, Ill.

The regular meetings of the Association are held on the second Monday of March, June, September, and December, the last being the Annual Meeting. The hour and place of meeting are not fixed, but this information will be furnished on application to the Secretary.

Louisiana Association, Organized 1914.

President, W. B. Gregory; Secretary, Charles W. Okey, Tulane University, New Orleans, La.

The regular meetings of the Association are held at The Cabildo, New Orleans, La., on the first Monday of January, April, July, and October.

Northwestern Association, Organized 1914.

President, W. L. Darling; Secretary, Ralph D. Thomas, Minneapolis, Minn.

Philadelphia Association, Organized 1913.

President, Edward B. Temple; Secretary, W. L. Stevenson, 412 City Hall, Philadelphia, Pa.

The regular meetings of the Association are held at the Engineers'

Club of Philadelphia, 1317 Spruce Street, on the first Monday in January, April, and October, the last being the Annual Meeting.

Portland, Ore., Association, Organized 1913.

President, J. P. Newell; Secretary, J. A. Currey, 194 North 13th Street, Portland, Ore.

St. Louis Association, Organized 1914.

President, J. A. Ockerson; Secretary-Treasurer, Gurdon G. Black, 34 East Grand Avenue, St. Louis, Mo.

The meetings of the Association are held at the Engineers' Club Auditorium. The Annual Meeting is held on the fourth Monday in November. The time of other meetings is not fixed, but this information will be furnished on application to the Secretary.

San Diego Association, Organized 1915.

President, N. B. Kellogg; Secretary-Treasurer, J. R. Comly, 4105 Falcon Street, San Diego, Cal.

Seattle Association, Organized 1913.

President, A. O. Powell; Secretary-Treasurer, Carl H. Reeves, 4722 Latona Avenue, Seattle, Wash.

The regular meetings of the Association are held at 12.15 p. m., on the last Monday of each month, at The Northold Inn, 212 University Street.

Southern California Association, Organized 1914.

President William Mulholland; Secretary, W. K. Barnard, 1105 Central Building, Los Angeles, Cal.

The Southern California Association of Members of the American Society of Civil Engineers (Los Angeles, Cal.) holds regular bi-monthly meetings, with banquet, at Hotel Clark, on the second Wednesday of February, April, June, August, October, and December, the last being the Annual Meeting of the Association.

Informal luncheons are held at 12.15 p. m. every Wednesday, and the place of meeting may be ascertained from the Secretary.

The by-laws of the Association provide for the extension of hospitality to any member of the Society who may be temporarily in Los Angeles, and any such member will be gladly welcomed as a guest at any of the meetings or luncheons.

Spokane Association, Organized 1914.

President, Ulysses B. Hough; Secretary, A. D. Butler, Spokane, Wash.

Texas Association, Organized 1913.

President, John B. Hawley; Secretary, J. F. Witt, Dallas, Tex.

Utah Association, Organized 1916.

President, E. C. La Rue; Secretary-Treasurer, H. S. Kleinschmidt, 306 Dooley Building, Salt Lake City, Utah.

**MINUTES OF MEETINGS OF
SPECIAL COMMITTEES
TO REPORT UPON ENGINEERING SUBJECTS**
Special Committee on Materials for Road Construction

September 23d, 1916.—The meeting was called to order at the House of the Society. Present, George W. Tillson (Chairman, *pro tem.*), H. K. Bishop, A. W. Dean, Nelson P. Lewis, Charles J. Tilden, and A. H. Blanchard (Secretary).

The minutes of the meeting of July 8th, 1916, were read and approved.

The following sections of the 1917 Report were presented, discussed, and tentatively adopted: Gravel Roads, by Mr. Bishop; Broken Stone Roads, Broken Stone Roads with Bituminous Surfaces, and Bituminous Macadam Pavements, by Mr. Dean; Asphalt Block Pavements, Sheet-Asphalt Pavements, and Joints and Expansion-Contraction Joints under General Conclusions, by Mr. Blanchard; and Cement-Concrete Pavements, by Mr. Tilden.

On motion, the Committee adjourned to meet on October 21st, 1916.

**PRIVILEGES OF ENGINEERING SOCIETIES
EXTENDED TO MEMBERS OF THE
AMERICAN SOCIETY OF CIVIL ENGINEERS**

Members of the American Society of Civil Engineers will be welcomed by the following Engineering Societies, both to the use of their Reading Rooms, and at all meetings:

- American Institute of Electrical Engineers**, 33 West Thirty-ninth Street, New York City.
- American Institute of Mining Engineers**, 29 West Thirty-ninth Street, New York City.
- American Society of Mechanical Engineers**, 29 West Thirty-ninth Street, New York City.
- Architekten-Verein zu Berlin**, Wilhelmstrasse 92, Berlin W. 66, Germany.
- Associação dos Engenheiros Cíveis Portuguezes**, Lisbon, Portugal.
- Australasian Institute of Mining Engineers**, Melbourne, Victoria, Australia.
- Boston Society of Civil Engineers**, 715 Tremont Temple, Boston, Mass.
- Brooklyn Engineers' Club**, 117 Remsen Street, Brooklyn, N. Y.
- Canadian Society of Civil Engineers**, 176 Mansfield Street, Montreal, Que., Canada.
- Civil Engineers' Society of St. Paul**, St. Paul, Minn.
- Cleveland Engineering Society**, Chamber of Commerce Building, Cleveland, Ohio.
- Cleveland Institute of Engineers**, Middlesbrough, England.

- Dansk Ingeniorforening**, Amaliegade 38, Copenhagen, Denmark.
- Detroit Engineering Society**, 46 Grand River Avenue, West, Detroit, Mich.
- Engineers and Architects Club of Louisville**, 1412 Starks Building, Louisville, Ky.
- Engineers' Club of Baltimore**, 6 West Eager Street, Baltimore, Md.
- Engineers' Club of Kansas City**, E. B. Murray, Secretary, 920 Walnut Street, Kansas City, Mo.
- Engineers' Club of Minneapolis**, 17 South Sixth Street, Minneapolis, Minn.
- Engineers' Club of Philadelphia**, 1317 Spruce Street, Philadelphia, Pa.
- Engineers' Club of St. Louis**, 3817 Olive Street, St. Louis, Mo.
- Engineers' Club of Toronto**, 96 King Street, West, Toronto, Ont., Canada.
- Engineers' Club of Trenton**, Trent Theatre Building, 12 North Warren Street, Trenton, N. J.
- Engineers' Society of Northeastern Pennsylvania**, 415 Washington Avenue, Scranton, Pa.
- Engineers' Society of Pennsylvania**, 31 South Front Street, Harrisburg, Pa.
- Engineers' Society of Western Pennsylvania**, 2511 Oliver Building, Pittsburgh, Pa.
- Institute of Marine Engineers**, The Minories, Tower Hill, London, E., England.
- Institution of Engineers of the River Plate**, Calle 25 de Mayo 195, Buenos Aires, Argentine Republic.
- Institution of Naval Architects**, 5 Adelphi Terrace, London, W. C., England.
- Junior Institution of Engineers**, 39 Victoria Street, Westminster, S. W., London, England.
- Koninklijk Instituut van Ingenieurs**, The Hague, The Netherlands.
- Louisiana Engineering Society**, State Museum Building, Chartres and St. Ann Streets, New Orleans, La.
- Memphis Engineers' Club**, Memphis, Tenn.
- Midland Institute of Mining, Civil and Mechanical Engineers**, Sheffield, England.
- Montana Society of Engineers**, Butte, Mont.
- North of England Institute of Mining and Mechanical Engineers**, Newcastle-upon-Tyne, England.
- Oesterreichischer Ingenieur- und Architekten-Verein**, Eschenbachgasse 9, Vienna, Austria.
- Oregon Society of Civil Engineers**, Portland, Ore.
- Pacific Northwest Society of Engineers**, 312 Central Building, Seattle, Wash.
- Rochester Engineering Society**, Rochester, N. Y.

Sachsischer Ingenieur- und Architekten-Verein, Dresden, Germany.

Sociedad Colombiana de Ingenieros, Bogota, Colombia.

Sociedad de Ingenieros del Peru, Lima, Peru.

Societe des Ingenieurs Civils de France, 19 rue Blanche, Paris, France.

Society of Engineers, 17 Victoria Street, Westminster, S. W., London, England.

Svenska Teknologforeningen, Brunkebergstorg 18, Stockholm, Sweden.

Tekniske Forening, Vestre Boulevard 18-1, Copenhagen, Denmark.

Vermont Society of Engineers, George A. Reed, Secretary, Montpelier, Vt.

Western Society of Engineers, 1737 Monadnock Block, Chicago, Ill.

A Review of the Principles Governing City Planning. By Nelson E. Lewis, M. Am. Soc. E. (1915, 128 pp., illus., 10¢). New York: John Wiley & Sons, Inc.; London: Chapman & Hall, Limited. 1916. \$2.50. (Distributed by the Author.)

This book is devoted entirely to the engineering aspects of city planning, and is written by an engineer who is not only a student of the subject but also a practitioner. It is a book for the engineer who is interested in the planning of cities, and for the city planner who is interested in the engineering aspects of city planning. The book is divided into two parts. The first part is devoted to the general principles of city planning, and the second part is devoted to the engineering aspects of city planning. The book is written in a clear and concise manner, and is illustrated with many diagrams and photographs. It is a book that every engineer and city planner should have on his shelf.

STRESSES IN STRUCTURES. By A. H. Haller. Revised by Clyde T. Morris, M. Am. Soc. E. Third Edition. (Cloth, 9 1/2 x 6 1/2 in., illus., 18¢). New York: John Wiley & Sons, Inc.; London: Chapman & Hall, Limited, 1916. \$2.50.

This book is a revision of the first edition, which was published in 1905. It contains many new chapters and sections, and is written in a clear and concise manner. It is a book that every engineer and architect should have on his shelf. The book is divided into two parts. The first part is devoted to the general principles of stresses in structures, and the second part is devoted to the engineering aspects of stresses in structures. The book is written in a clear and concise manner, and is illustrated with many diagrams and photographs. It is a book that every engineer and architect should have on his shelf.

* Unless otherwise specified, books in this list have been changed by the publisher.

ACCESSIONS TO THE LIBRARY

(From September 6th to October 3d, 1916)

DONATIONS*

EXAMPLES IN ALTERNATING-CURRENTS, VOL. I.

By F. E. Austin. Second Edition, with Additions. Leather, 7 x 5 in., illus. 223 pp. Hanover, N. H., F. E. Austin, 1916. \$2.40. (Donated by the Author.)

The popular demand for this work, as stated in the preface, has made the second edition necessary. The book has been designed to assist the college student, to act as a guide in the solution of engineering problems, and also, it is said, will be of value to teachers and to those who are studying the subject independently. One of its important features, it is stated, consists of various tables containing values of variable quantities met with in engineering practice, so arranged as to include a wide range of values and to render evaluation convenient and rapid. There is an index of seven pages.

THE PLANNING OF THE MODERN CITY:

A Review of the Principles Governing City Planning. By Nelson P. Lewis, M. Am. Soc. C. E. Cloth, 9½ x 6½ in., illus., 15 + 423 pp. New York, John Wiley & Sons, Inc.; London, Chapman & Hall, Limited, 1916. \$3.50. (Donated by the Author.)

This book is devoted entirely to the engineering aspects of city planning, or to city planning as an engineering problem or group of problems, and the subjects discussed herein are those with which the engineer who is responsible for the working out of a general plan for a city or for successive additions to an existing city, should be familiar. As there is no undertaking which demands more careful study of what has happened elsewhere, what is likely to happen in a particular place, and the development of tendencies which are sure to result in changes in methods of living and of conducting business, as city planning, the author hopes that municipal engineers will find this book of value in bringing to them a keener realization of their part in, and responsibility for, that work. The subject-matter is illustrated fully with photographs and diagrams and plans, showing what has recently been done and what is being planned and executed at the present time, in the way of city planning, in the United States, Europe, and South America. The Contents are: Introductory; The City Planning Movement; The Correction of Mistakes; Elements of a City Plan; The Transportation System; The Street System; Parks and Recreation Facilities; Public Buildings and Civic Centers; The Economic Value of a City Plan; The Industrial Town or District; Street Traffic; Street Details—Utility and Adornment; The Railroad in Its Relation to the Street System; Restrictions; The Environs of the City; Garden Cities; City Planning Legislation; Progress and Methods; Financing a City Plan; Municipal Land Policies; The Opportunities and Responsibilities of the Municipal Engineer; Sources of Information; Index.

STRESSES IN STRUCTURES.

By A. H. Heller. Revised by Clyde T. Morris, M. Am. Soc. C. E. Third Edition. Cloth, 9½ x 6½ in., illus., 18 + 374 pp. New York, John Wiley & Sons, Inc.; London, Chapman & Hall, Limited, 1916. \$2.75.

The first edition of this book was published in 1905, and in the preface to that edition, it is stated that the author's aim was to supply, in one volume, a textbook covering stresses in all forms of simple trusses, which would also serve as a reference book for the practicing engineer. In the preface to the third edition, it is said that the explanations contained in the text have been expanded, numerous examples have been given to illustrate the methods used, and many of the figures have been re-drawn and new ones added. Chapters V and VI have been combined to be Chapter V which includes an explanation of Bow's notation and a new article on derricks. Chapter IX has been expanded into two chapters, X on Roof Trusses and XI on Bridge Trusses. In Chapter XII, solutions have been added for the deck Pratt, subdivided Warren,

* Unless otherwise specified, books in this list have been donated by the publishers.

Whipple, and Pettit trusses, and skew bridges. In Chapter XIII, a complete solution of the stresses in a Pratt truss railroad bridge from wheel loads is added and a moment table is given for Cooper's loading, and in Chapter XIV a more complete explanation is given of the solution of the stresses in bridges with curved track. At the end of each chapter are questions and problems referring to the subject discussed in that chapter. The Contents are: Stresses and Deformations Within the Elastic Limits; Stresses and Deformations Beyond the Elastic Limit; The Laws of Equilibrium and Their Application; Application of the Laws of Equilibrium to the Structure as a Whole; Reactions; Application of the Laws of Equilibrium to a Part of a Structure; Stresses; Stresses in Beams and Girders; Deflections of Beams and Girders; Special Cases of Beams and Girders Loaded and Supported in Different Ways; Stresses in Blocks and Columns; Roof Trusses; Bridge Trusses; Stresses in Simple Bridge Trusses for Uniform Loads; Stresses in Railway Bridges from Wheel Loads; Stresses in Bridges from Horizontal Forces; Index.

Gifts have also been received from the following:

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| Alaskan Eng. Comm. 2 vol. | Merchants' Assoc. of New York. 1 vol. |
| Am. Inst. of Chemical Engrs. 1 pam. | 1 pam. |
| Am. Iron and Steel Inst. 1 pam. | Michigan Coll. of Mines. 1 pam. |
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| Am. Telephone & Telegraph Co. 1 vol. | Minneapolis, St. Paul & Sault Ste. Marie Ry. Co. 1 pam. |
| Assoc. of Transportation and Car Accounting Officers. 1 vol. | Minnesota, Univ. of. 1 pam. |
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 University Club. 1 bound vol.
 Vermont Soc. of Engrs. 1 pam.
 Virginia-Geol. Survey. 1 vol.
 Virginia-State Corporation Comm. 1 bound vol.
 Waddell, J. A. L. 1 pam.
 Washington Irrig. Inst. 1 pam.
 West Newton, Mass.-City Engr. 1 pam.
 Western Soc. of Engrs. 1 pam.

SUMMARY OF ACCESSIONS

(From September 6th to October 3d, 1916)

Donations (including 1 duplicate)..... 166

MEMBERSHIP

(From September 8th to October 5th, 1916)

ADDITIONS

MEMBERS	Date of Membership.
BOYLE, JAMES MURRAY. Executive Engr., Sanderson & Porter, 52 William St., New York City.....	Sept. 12, 1916
BROWER, IRVING CLINTON. Commr. of Public Works, City Hall, Evanston, Ill.....	Assoc. M. Nov. 30, 1909 M. Sept. 12, 1916
BROWN, WILLIAM EDWIN. Res. Engr., East River Tunnels, Public Service Comm., First Dist., 400 East 21st St., Brooklyn, N. Y.....	May 31, 1916
BURKE, RALPH HANEY. Chf. Engr., Illinois Waterway Comm., 1104 Peoples Life Bldg., Chicago, Ill.....	Jun. Dec. 4, 1906 Assoc. M. Oct. 4, 1910 M. Sept. 12, 1916
CARSON, JOHN. Chf. Engr., Duluth Street Ry., 1927 West 3d St., Duluth, Minn.....	Sept. 12, 1916
COBB, LOUIS RENO. Reinforced Concrete Designing Engr., Westinghouse, Church, Kerr & Co., 37 Wall St., New York City.....	Sept. 12, 1916
FORTNEY, CAMDEN PAGE. Asst. Engr., U. S. Engr. Office, Dam 43, Ohio River, Picher, Ky.....	Jun. Oct. 2, 1906 Assoc. M. Nov. 30, 1909 M. Sept. 12, 1916
HILPERT, MEIER GEORGE. P. O. Box 754, Harrisburg, Pa..	Sept. 12, 1916
JOHNSON, CHARLES. 7925 Sycamore St., New Orleans, La.....	Assoc. M. Feb. 28, 1911 M. Mar. 14, 1916
MCALPINE, WILLIAM HORATIO. Asst. Engr., U. S. Engr. Dept., P. O. Box 72, Louisville, Ky.....	Sept. 12, 1916
MASSEY, GEORGE BRAGG. Cons. Engr. (Geo. B. Massey Co.), Peoples Gas Bldg., Chicago, Ill.....	Sept. 12, 1916
NOLEN, WILLIAM ISAAC. Asst. Chf. Engr., Tennessee Copper Co., Copperhill, Tenn.....	Assoc. M. May 3, 1910 M. Sept. 12, 1916
PAGON, WILLIAM WATTERS. Cons. Engr. (J. E. Greiner & Co.), 1319 Fidelity Bldg. (Res., 39th and Oak Sts.), Baltimore, Md.....	Jun. Sept. 3, 1907 Assoc. M. Dec. 3, 1912 M. Sept. 12, 1916
REITZE, CHESTER NELSON. Cons. Engr. (Reitze & Storey & Duffy, Inc.), 803 Northern Bank Bldg., Seattle, Wash.....	Sept. 12, 1916
ROCKWELL, WILLIAM LINCOLN. With Irrig. Investigations, U. S. Dept. of Agriculture, 337 Federal Bldg., San Antonio, Tex.....	Sept. 12, 1916
RODRIGUEZ, ARTURO. Cons. and Contr. Engr., 308 West Seneca St., Ithaca, N. Y.....	Sept. 12, 1916
SCHURIG, ERNEST GEORGE. Supt. of Constr., U. S. Treasury Dept., Newark, Ohio.....	Sept. 12, 1916
SEASTONE, CHARLES VICTOR. Cons. Engr., 530 State St., Madison, Wis.....	Assoc. M. Dec. 5, 1906 M. Sept. 12, 1916

MEMBERS (Continued)		Date of Membership.
SHERRON, GEORGE AUSTIN. City Engr. and Street Commr., 4 Delaware St., Norwalk, Conn.	Assoc. M. M.	Sept. 2, 1914 June 24, 1916
SKINNER, FENWICK FENTON. (F. F. Skinner & Co.), 21 Park Row, Room 1705, New York City		Sept. 12, 1916
THORLEY, IRA OTIS. 310 Congress Bldg., Detroit, Mich.	Assoc. M. M.	Oct. 29, 1912 Sept. 12, 1916
TURNER, HOWARD MOORE. Hydr. Engr., Tur- ners Falls Power & Elec. Co., Turners Falls, Mass.	Assoc. M. M.	April 1, 1914 Sept. 12, 1916
VAN SUETENDAEL, ACHILLE OCTAVE. Chf. Structural Engr., Dept. of State Archi- tecture, New York State, 101 Lancaster St., Albany, N. Y.	Jun. Assoc. M. M.	Jan. 3, 1905 June 3, 1908 Sept. 12, 1916
WARD, THOMAS ROBERT JOHN. Chf. Engr. and Secy. to the Govt. of the Punjab, Irrig. Branch, Public Works Dept., Simla, India.		June 23, 1916
WATSON, ROBERT MALCOLM. Gen. Municipal Engr. (Wise & Watson); Borough Engr., Rutherford and North Arlington, 46 Ridge Rd., Rutherford, N. J.		April 18, 1916
WOOLFOLK, WILLIAM GORDON. Mgr., Chicago Office, San- derson & Porter, 72 West Adams St., Chicago, Ill.		Sept. 12, 1916
ASSOCIATE MEMBERS		
BABBITT, HAROLD EATON. Instr., Municipal and San. Eng., Univ. of Illinois, 907 West Oregon St., Urbana, Ill.	Jun. Assoc. M.	April 2, 1912 Sept. 12, 1916
BARNES, JOHN WADDINGTON HARRY. Engr., Madera Canal & Irrig. Co., Box 111, Madera, Cal.		Sept. 12, 1916
BATTIE, HERBERT SCANDLIN. Care, S. Risler, Am. Bridge Co., Gary, Ind.	Jun. Assoc. M.	Dec. 1, 1908 Sept. 12, 1916
BERGAN, THOMAS BERNARD. City Engr., Auburn, N. Y.		April 18, 1916
BOVYER, WILLIAM BLAIR. Asst. City Engr., 760 Eighth Ave., San Francisco, Cal.	Jun. Assoc. M.	Oct. 1, 1913 Sept. 12, 1916
BREITZKE, CHARLES FREDERICK. San. Engr., Bureau of Water, Dept. of Streets and Public Impvts. of Jersey City, Boonton, N. J.	Jun. Assoc. M.	Dec. 3, 1907 Sept. 12, 1916
BRYSON, CARLYLE HUGO. City Engr., Lima, Ohio	Jun. Assoc. M.	Mar. 2, 1915 Sept. 12, 1916
CADWALLADER, WALLACE LAIRD. With R. D. Coombs & Co., 30 Church St., Room 236 E, New York City.	Jun. Assoc. M.	Sept. 6, 1910 May 31, 1916
CLARK, HOWARD FOSTER. Asst. Engr., Hydr. Dept., R. R. Comm. of California, 833 Market St., San Francisco, Cal.	Jun. Assoc. M.	Dec. 2, 1914 Sept. 12, 1916

ASSOCIATE MEMBERS (Continued)

		Date of Membership.
CLAUSNITZER, JOHN. Archt. and Engr., 272 } Third Ave., New York City.....	Jun. } Assoc. M.	Mar. 3, 1903 April 18, 1916
CUMMINS, CHARLES ALBERT. Vice-Pres. and Gen. Mgr., Consolidated Eng. Co., 243 Calvert Bldg., Balti- more, Md.....		Sept. 12, 1916
CURRIE, THOMAS AUSTIN, JR. With Stone & Webster Eng. Corporation, 69 Gainsborough St., Suite 6, Boston, Mass.....		Sept. 12, 1916
DADING, CHARLES HENRY. Structural Engr. and Estimator, James H. Wells, 69 West Manheim St., German- town, Philadelphia, Pa.....		Sept. 12, 1916
DRISCOLL, WILLIAM. Care, Guantanamo & Western R. R., Guantanamo, Cuba.....		Sept. 12, 1916
DUCK, ALLEN DOUGLAS. City Engr., Greenville, Tex.....		Sept. 12, 1916
DURANT, WILLIAM BULLARD. 9 Lowell St., } Cambridge, Mass.....	Jun. } Assoc. M.	Jan. 6, 1915 Sept. 12, 1916
ENGER, ARTHUR LUDWIG. Asst. Engr., Agricul- } tural Experiment Station, Tucson, Ariz. }	Jun. } Assoc. M.	Jan. 2, 1912 Sept. 12, 1916
FIXEN, VICTOR LEROY. Testing Engr., C. A. P. Turner, 2035 Lincoln Ave., St. Paul, Minn.....		Sept. 12, 1916
GALLOGLY, ALEXANDER VINCENT. Asst. Engr., Board of Water Supply, 2675 Decatur Ave., New York City.....		Sept. 12, 1916
GELSTON, WILLIAM RICHARD. Supt., Citizens Water Works Co. Plant, 314 Maine St., Quincy, Ill.....		Sept. 12, 1916
GILMAN, EDGAR DOW. Instr., Experimental } Hydr. Eng., Univ. of Minnesota, Minne- } apolis, Minn.....	Jun. } Assoc. M.	April 1, 1914 Sept. 12, 1916
GODFREY, STUART CHAPIN. Asst. Prof. of } Math., U. S. Military Academy, West } Point, N. Y.....	Jun. } Assoc. M.	Sept. 5, 1911 Sept. 12, 1916
GREELY, FRANK STICKNEY. U. S. Engr. Office, Burke Bldg., Seattle, Wash.....		April 18, 1916
GROVER, WILLIAM ALBERT. City Civ. Engr.; Div. Engr., State Highway Dept., 41 Atkinson St., Dover, N. H..		Sept. 12, 1916
GUERDRUM, GEORGE HAGBART. Care, U. S. Geological Survey, Wanakena, N. Y.....		May 31, 1916
HAMILTON, PETER DAVIDSON GUNN. With } Stone & Webster Eng. Corporation, 148 } Dedham Ave., Needham, Mass.....	Jun. } Assoc. M.	Feb. 4, 1913 Sept. 12, 1916
HANINK, HERMAN HENRY. Structural Engr., State of Illinois; Chf. Engr., Green & Sons Co., Palos Park, Ill.....		Sept. 12, 1916
HART, LAURANCE HASTINGS. Asst. Engr., Lup- fer & Remick, 594 Ellicott Sq., Buffalo, } N. Y.....	Jun. } Assoc. M.	Oct. 3, 1911 June 23, 1916

4018 Pottsville Ave., Philadelphia, Pa.

Sept. 12, 1916

ASSOCIATE MEMBERS (Continued)		Date of Membership.
HAYDEN, FRANK DEMETRIUS. Asst. Engr. and Chf. Clerk, Office of Purchasing Agt., Alaskan Eng. Comm., 5400 First Ave., N. E., Seattle, Wash.	May 31, 1916	
HERBOLD, CARL JAMES. Engr., Walker & Weeks, 102 Savannah Ave., Cleveland, Ohio.	Sept. 12, 1916	
HOWARD, JOHN SPENCE. Chf. Engr., The Thomas Hampton Co.; Cons. Engr., 12 East Lexington St., Balti- more, Md.	Sept. 12, 1916	
HYMAN, ARTHUR DAVID. Waterproofing Engr. and Contr. (The Waterproofing & Constr. Co.), 50 East 42d St., New York City.	Sept. 12, 1916	
KELLEY, EARL FOSTER. Asst. Bridge Engr., Iowa Highway Comm., Box 254, Station A, Ames, Iowa.	Sept. 12, 1916	
LAU, PERCY MAPES. P. O. Box 43, Pontiac, Mich.	Sept. 12, 1916	
LAWTON, FREDERICK TYLER. Asst. Engr., Dept. of State Engr. and Surv., 1073 Seventy-fourth St., Brooklyn, N. Y.	June 23, 1916	
LECKIE, ALEXANDER ROSS. Care, City Engr.'s Office, Dallas, Tex.	Sept. 12, 1916	
MCCABE, JOHN JOSEPH. Res. Engr., U. S. Engr. Dept., U. S. Engr. Office, Bond and Turner Sts., Troy, N. Y.	Sept. 12, 1916	
MCCLAINE, CARL ARTHUR. 519 East State St., Ithaca, N. Y.	Sept. 12, 1916	
MAERKER, ERWIN. Care, Fargo Eng. Co., 226 West Main St., Jackson, Mich.	Sept. 12, 1916	
MARKS, EDWIN HALL. Capt., Corps of Engrs., } U. S. A., West Point, N. Y. } Assoc. M.	Sept. 3, 1913 Sept. 12, 1916	
MICHAEL, WILLIAM WHIPPLE. 44 Maiden Lane, King- ston, N. Y.	Sept. 12, 1916	
MORRISON, WILLIAM GROVER. Contr. (Mor- rison Constr. Co.), 311 Hubbell Bldg., } Des Moines, Iowa. } Assoc. M.	Jun. April 2, 1912 Sept. 12, 1916	
NORTON, ALBERT COLWELL. Pres., The Norton Eng. & Contr. Co., 2046 Vine St., Denver, Colo.	Sept. 12, 1916	
PHILIPS, HECTOR SOMERVILLE. Asst. Engr., International Joint Comm., 695 Spadina Ave., Toronto, Ont., Canada.	May 31, 1916	
RESWICK, SOLOMON. Asst. Engr., New York State Barge Canal, 721 North Jay St., Rome, N. Y.	Sept. 12, 1916	
SAYEE, FRED DENNISTON. Borough Engr. and Supt., Municipal Water Dept., Brookville, Pa.	Sept. 12, 1916	
SCHEDLER, CARL WILLIAM, JR. Supt., Great Western Electro-Chemical Co., Box 582, } Pittsburg, Cal. } Assoc. M.	Jun. May 2, 1911 Sept. 12, 1916	
SCHMIDT, JOHN GEORGE. Chf. Engr., Dept. of Public Service, City Hall, Norwood, Ohio.	Sept. 12, 1916	

ASSOCIATE MEMBERS (Continued)		Date of Membership.
SELTZER, HYMEN AARON. Eng. Dept., Christopher & Simpson Iron Works Co., 8th and Park Ave. (Res., 5133 Cates Ave.), St. Louis, Mo.	Jun. Assoc. M.	May 2, 1911 Sept. 12, 1916
SHERMAN, JOHN ROCKWOOD. Asst. Engr., U. S. Reclamation Service, Meadow Creek, Wash.		Sept. 12, 1916
SLEEPER, BENJAMIN ALVAN. (Haines & Sherman), 306 Temple Bldg., Camden, N. J.		Sept. 12, 1916
STIVERS, ARTHUR DUCAT. Cons. Engr., Pittsburg, Tex.		Sept. 12, 1916
STREHAN, GEORGE ERNEST. Asst. Engr., Bureau of Bldgs., Borough of Manhattan (Res., 287 East 203d St.), New York City	Jun. Assoc. M.	Oct. 3, 1911 Sept. 12, 1916
STRONG, SIDNEY DAVIS. Junior Engr., U. S. Engr. Office, Sault Ste. Marie, Mich.	Jun. Assoc. M.	Nov. 5, 1907 Mar. 14, 1916
THOMA, JOSEPH C. U. S. Surv. of Gen. Land Office, 267 East 4th South St., Salt Lake City, Utah		Sept. 12, 1916
TORKELSON, MARTIN WILHELM. Bridge Engr., Wisconsin Highway Comm., 2141 West Lawn Ave., Madison, Wis.		Sept. 12, 1916
TRAYLOR, KELS EMMETT. Track Superv., Columbus Div., So. Ry., Winona, Miss.		Sept. 12, 1916
VANDEMOER, JOHN JAY. 1027 Rood Ave., Grand Junction, Colo.		June 23, 1916
WHITE, WILFRED ASHENHURST. Civ. and Hydr. Engr. (Rands & White), 921 Electric Bldg., Portland, Ore.		Sept. 12, 1916
WILLIAMS, FREDERICK. U. S. Surv. and Draftsman, U. S. Engr. Office, New London, Conn.	Jun. Assoc. M.	Oct. 29, 1912 Sept. 12, 1916
WILSON, WILLIAM WEST. Care, D. W. Lum, Special Engr., So. Ry., Washington, D. C.	Jun. Assoc. M.	Dec. 4, 1906 April 18, 1916
WOLFF, ALFRED DANIEL, JR. Res. Engr., N. Y. C. R. R., 24 Forbus St., Poughkeepsie, N. Y.	Jun. Assoc. M.	Feb. 28, 1911 Sept. 12, 1916
WRIGHT, RENE BARBER. Asst. Engr., Bureau of Highways and Bridges, 620 Miller Ave., Portland, Ore.	Jun. Assoc. M.	Aug. 31, 1909 April 18, 1916

ASSOCIATES

BEMIS, ALBERT FARWELL. Pres., Bemis Bro. Bag Co., Drawer 5173, Boston, Mass.		Sept. 12, 1916
FENNO, EDWARD KIMBALL. Engr. and Contr., 204 North Beech St., Syracuse, N. Y.		Sept. 12, 1916
MANWARING, ROY ARTIMUS. (Manwaring & Cummins), 4918 Pulaski Ave., Philadelphia, Pa.		Sept. 12, 1916

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STANCLIFFE, WILLIAM LEWIS, Gen. Supt., Hassam Paving Co., P. O. Box 142, Reading, Pa.....		Sept. 12, 1916
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BETTS, CLIFFORD AULL, Care, Cuban Portland Cement Co., Mariel, Cuba.....		Sept. 12, 1916
BRAGG, KENDAL BENJAMIN, 705 Summers St., Dayton, Ohio.....		Sept. 12, 1916
CHEATHAM, JAMES LESLIE, (Mutart & Cheatham), 615 West 162d St., New York City.....		Sept. 12, 1916
COBB, WILLIAM RICHARD, 1373 Fourth Ave., San Francisco, Cal.....		Mar. 14, 1916
HARDAWAY, BENJAMIN HURT, JR. Engr., Hardaway Contr. Co., Bridgewater, N. C.....		Sept. 12, 1916
HARRINGTON, WALTON, Care, The Technology Club, 17 Gramercy Park, New York City.....		Sept. 12, 1916
HOWARD GERALD BRANCH, Cons. Engr., Nashville, Tenn..		Sept. 12, 1916
IRWIN, WILLIAM CLARK, Dist. Representative, Kalamazoo Ry. Supply Co., 304 Frisco Bldg., St. Louis, Mo....		Sept. 12, 1916
KNISKERN, PHILIP WHEELER, (Knap & Kniskern Co.), 19 South La Salle St., Chicago, Ill.....		Sept. 12, 1916
KORA, DAHYABHAI BALABHAI, Asst. Engr., Gondal State, Gondal (Kathiawar), Bombay Presidency, India...		May 31, 1916
LEHBACH, HENRY GARDNER, Asst. Engr., Inspection Dept., Dunn Wire Cut Lug Brick Co., Conneaut, Ohio.....		Mar. 14, 1916
MARRIAN, RALPH RICHARDSON, Co. L, 7th New York Infantry, McAllen, Tex.....		April 18, 1916
MATTHEW, RAYMOND, Prof. of Irrig. Eng., New Mexico Coll. of Agriculture and Mechanic Arts, P. O. Box 31, State College, N. Mex.....		May 31, 1916
SPOONER, RAY NEWHALL, Superintending Engr., Allen N. Spooner & Son, Inc.; Res., 259 Parkside Ave., Brooklyn, N. Y.....		Sept. 12, 1916
TILTON, GEORGE ALBERT, JR. Eng. Draftsman, City Engr.'s Office, 1162 North Alexandria Ave., Los Angeles, Cal.		Sept. 12, 1916
WEED, LLOYD WOOLSEY, Designing Engr., Turner Constr. Co., 307 West 70th St., New York City.....		Sept. 12, 1916
WOOLWORTH, WENDELL HOWARD, Co. D, 7th New York Infantry, McAllen, Tex.....		Sept. 12, 1916

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- LEWIS, JOHN OVINGTON. Asst. Engr., Bureau of Bldgs., Borough of Manhattan, 556 Sixteenth St., Brooklyn, N. Y.
- LIEB, VICTOR. With Texas State Board of Water Engrs. (Res., 4205 Ave. D), Austin, Tex.
- LUPINSKI, OSWALD. Engr. and Contr. (Lupinski-Richards Co.), 6103 Jenkins Arcade, Pittsburgh (Res., 3 Division St., Crafton), Pa.
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- MCGRATH, JOHN KILBY. Road Engr., Fayetteville Dist., Mt. Hope, W. Va.
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- MADISON, JAMES TALBOTT. 2196 O'Farrell St., San Francisco, Cal.
- MASON, SAMUEL JEFFERSON. City Surv.; (Mason & Smith), 309 Madison Ave., Perth Amboy, N. J.
- MENEFEE, FERDINAND NORTHRUP. Asst. Prof. of Eng. Mech., Univ. of Michigan, 209 North Blackstone St., Jackson, Mich.
- METCALFE, JOSEPH DAVIS. Care, Chf. Engr., G. C. & S. F. Ry., Galveston, Tex.
- MILLER, HYAM. Junior Engr., U. S. Engr. Office, P. O. Bldg., New London, Conn.
- MOORE, CHARLES REA. Engr. in Chg., General Constr. Co., Lewiston, Idaho.
- PAYROW, HARRY GORDON. 427 Cherokee St., South Bethlehem, Pa.
- PORZELIUS, ALBERT FREDRICK. Acting Supt., Louisiana Water Co., Louisiana, Mo.
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- SANGER, WALTER MAX. 635 Lincoln Ave., Toledo, Ohio.
 SHAFER, JAMES CHARLES FORSYTHE. Care, Structural Concrete Co., Dayton, Ohio.
 SOPER, ELLIS CLARK. Cons. Engr., Mariel, Cuba.
 SOVEREIGN, HARRY EVANS. Box 444, Laredo, Tex.
 STANTON, HARRY SEEL. Care, E. W. Hess, Du Bois, Pa.
 STEVENSON, WILLIAM FREEMAN. 30 Elk Ave., New Rochelle, N. Y.
 TAYLOR, CHESTER ANTRIM. Supt., Herbert L. Bass & Co., 128 Ninth St., Miami, Fla.
 TEETER, EARLE EVERETT. Asst. Engr., U. S. Reclamation Service, Derry, N. Mex.
 TUNSTALL, WHITMELL PUGH. Physics Dept., Lehigh Univ., South Bethlehem, Pa.
 ULBICH, DANIEL. Palma Sola, Fla.
 UNDERHILL, GEORGE GARDNER. Care, L. G. Mouchel & Partners, Ltd., New Birks Bldg., Montreal, Que., Canada.
 VANDERVOORT, BENJAMIN FRANKLIN. 521 Eastern Parkway, Brooklyn, N. Y.
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 WENZELL, ANDREW PERRY. Cons. Engr., 410 Congress Bldg., Detroit, Mich.
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ASSOCIATES

- POLK, WILLIAM ANDERSON. The Chemists' Club, New York City.
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JUNIORS

- BICKERTON, WILBUR EARL. 1123 Munsey Bldg., Baltimore, Md.
 COLGAN, ROBERT JOSEPH. Asst. Supt., P. R. R., 332 West 8th St., Erie, Pa.
 COOPER, CLARENCE WINSTON. Contr. Engr., Box 368, Anniston, Ala.
 EDGEComb, REX EDWARD. Civ. Eng. Dept., Univ. of Pennsylvania, 5834 Angora St., Philadelphia, Pa.
 ELIOT, WILLIAM MACK. 3826 Ave. Q, Galveston, Tex.
 FINDLAY, ELWIN HAROLD. 293 Vine St., Bridgeport, Conn.
 GRAY, EARLE PIERCE. Instrumentman, Office of Res. Engr., N. Y. C. R. R., 615 Walbridge Ave., Toledo, Ohio.
 HEINONEN, HENRY JALMAR. Draftsman, Blaw Steel Constr. Co., 6358 Aurelia St., East Liberty, Pittsburgh, Pa.
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- WHITNEY, RALPH EDWARD. Res. Engr., Robert Spurr Weston, 191 Powder House Boulevard, West Somerville, Mass.

DEATHS

- BLOSS, RICHARD PARKHURST. Elected Member, January 6th, 1904; died May 22d, 1916.
- BOYNTON, ROBERT HAMMOND. Elected Junior, May 6th, 1914; Associate Member, April 18th, 1916; died September 18th, 1916.
- CALDWELL, CHARLES ADOLPHUS. Elected Member, September 5th, 1911; died August 31st, 1916.
- STANTON, FRANK McMILLAN. Elected Member, February 1st, 1899; died September 11th, 1916.

Total Membership of the Society, October 5th, 1916,

8116.

MONTHLY LIST OF RECENT ENGINEERING ARTICLES OF INTEREST

(September 2d to October 2d, 1916)

NOTE.—This list is published for the purpose of placing before the members of this Society, the titles of current engineering articles, which can be referred to in any available engineering library, or can be procured by addressing the publication directly, the address and price being given wherever possible.

LIST OF PUBLICATIONS

In the subjoined list of articles, references are given by the number prefixed to each journal in this list:

- | | |
|---|--|
| (2) <i>Proceedings, Engrs. Club of Phila., Philadelphia, Pa.</i> | (30) <i>Annales des Travaux Publics de Belgique, Brussels, Belgium, 4 fr.</i> |
| (3) <i>Journal, Franklin Inst., Philadelphia, Pa., 50c.</i> | (31) <i>Annales de l'Assoc. des Ing. Sortis des Ecoles Spéciales de Gand, Brussels, Belgium, 4 fr.</i> |
| (4) <i>Journal, Western Soc. of Engrs., Chicago, Ill., 50c.</i> | (32) <i>Mémoires et Compte Rendu des Travaux, Soc. Ing. Civ. de France, Paris, France.</i> |
| (5) <i>Transactions, Can. Soc. C. E., Montreal, Que., Canada.</i> | (33) <i>Le Génie Civil, Paris, France, 1 fr.</i> |
| (6) <i>School of Mines Quarterly, Columbia Univ., New York City, 50c.</i> | (34) <i>Portefeuille Economiques des Machines, Paris, France.</i> |
| (7) <i>Gesundheits Ingenieur, München, Germany.</i> | (35) <i>Nouvelles Annales de la Construction, Paris, France.</i> |
| (8) <i>Stevens Institute Indicator, Hoboken, N. J., 50c.</i> | (36) <i>Cornell Civil Engineer, Ithaca, N. Y.</i> |
| (9) <i>Engineering Magazine, New York City, 25c.</i> | (37) <i>Revue de Mécanique, Paris, France.</i> |
| (11) <i>Engineering (London), W. H. Wiley, 432 Fourth Ave., New York City, 25c.</i> | (38) <i>Revue Générale des Chemins de Fer et des Tramways, Paris, France.</i> |
| (12) <i>The Engineer (London), International News Co., New York City, 35c.</i> | (39) <i>Technisches Gemeindeblatt, Berlin, Germany, 0, 70m.</i> |
| (13) <i>Engineering News, New York City, 15c.</i> | (40) <i>Zentralblatt der Bauverwaltung, Berlin, Germany, 60 pf.</i> |
| (14) <i>Engineering Record, New York City, 10c.</i> | (41) <i>Electrotechnische Zeitschrift, Berlin, Germany.</i> |
| (15) <i>Railway Age Gazette, New York City, 15c.</i> | (42) <i>Proceedings, Am. Inst. Elec. Engrs., New York City, \$1.</i> |
| (16) <i>Engineering and Mining Journal, New York City, 15c.</i> | (43) <i>Annales des Ponts et Chaussées, Paris, France.</i> |
| (17) <i>Electric Railway Journal, New York City, 10c.</i> | (44) <i>Journal, Military Service Institution, Governors Island, New York Harbor, 50c.</i> |
| (18) <i>Railway Review, Chicago, Ill., 15c.</i> | (45) <i>Coal Age, New York City, 10c.</i> |
| (19) <i>Scientific American Supplement, New York City, 10c.</i> | (46) <i>Scientific American, New York City, 15c.</i> |
| (20) <i>Iron Age, New York City, 20c.</i> | (47) <i>Mechanical Engineer, Manchester, England, 8d.</i> |
| (21) <i>Railway Engineer, London, England, 1s. 2d.</i> | (48) <i>Zeitschrift, Verein Deutscher Ingenieure, Berlin, Germany, 1, 60m.</i> |
| (22) <i>Iron and Coal Trades Review, London, England, 6d.</i> | (49) <i>Zeitschrift für Bauwesen, Berlin, Germany.</i> |
| (23) <i>Railway Gazette, London, England, 6d.</i> | (50) <i>Stahl und Eisen, Düsseldorf, Germany.</i> |
| (24) <i>American Gas Light Journal, New York City, 10c.</i> | (51) <i>Deutsche Bauzeitung, Berlin, Germany.</i> |
| (25) <i>Railway Mechanical Engineer, New York City, 20c.</i> | (52) <i>Rigische Industrie-Zeitung, Riga, Russia, 25 kop.</i> |
| (26) <i>Electrical Review, London, England, 4d.</i> | (53) <i>Zeitschrift, Oesterreichischer Ingenieur und Architekten-Verein, Vienna, Austria, 70h.</i> |
| (27) <i>Electrical World, New York City, 10c.</i> | (54) <i>Transactions, Am. Soc. C. E., New York City, \$12.</i> |
| (28) <i>Journal, New England Water-Works Assoc., Boston, Mass., \$1.</i> | (55) <i>Transactions, Am. Soc. M. E., New York City, \$10.</i> |
| (29) <i>Journal, Royal Society of Arts, London, England, 6d.</i> | (56) <i>Transactions, Am. Inst. Min. Engrs., New York City, \$6.</i> |

- (57) *Colliery Guardian*, London, England, 5d.
 (58) *Proceedings*, Engrs.' Soc. W. Pa., 2511 Oliver Bldg., Pittsburgh, Pa., 50c.
 (59) *Proceedings*, American Water-Works Assoc., Troy, N. Y.
 (60) *Municipal Engineering*, Indianapolis, Ind., 25c.
 (61) *Proceedings*, Western Railway Club, 225 Dearborn St., Chicago, Ill., 25c.
 (62) *Steel and Iron*, Thaw Bldg., Pittsburgh, Pa., 10c.
 (63) *Minutes of Proceedings*, Inst. C. E., London, England.
 (64) *Power*, New York City, 5c.
 (65) *Official Proceedings*, New York Railroad Club, Brooklyn, N. Y., 15c.
 (66) *Journal of Gas Lighting*, London, England, 6d.
 (67) *Cement and Engineering News*, Chicago, Ill., 25c.
 (68) *Mining Journal*, London, England, 6d.
 (69) *Der Eisenbau*, Leipzig, Germany.
 (71) *Journal*, Iron and Steel Inst., London, England.
 (71a) *Carnegie Scholarship Memoirs*, Iron and Steel Inst., London, England.
 (72) *American Machinist*, New York City, 15c.
 (73) *Electrician*, London, England, 18c.
 (74) *Transactions*, Inst. of Min. and Metal, London, England.
 (75) *Proceedings*, Inst. of Mech. Engrs., London, England.
 (76) *Brick*, Chicago, Ill., 20c.
 (77) *Journal*, Inst. Elec. Engrs., London, England, 5s.
 (78) *Beton und Eisen*, Vienna, Austria, 1, 50m.
 (79) *Forschungsarbeiten*, Vienna, Austria.
 (80) *Tonindustrie Zeitung*, Berlin, Germany.
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